

45

(5)

THE
BRITISH SOLDIER
IN
INDIA:

BY
FRED. J. MOUAT,
M. D., F. R. C. S.,
SURGEON, H. M.'S BENGAL ARMY,
AND
INSPECTOR-GENERAL OF JAILS, BENGAL.



c
PUBLISHED BY
R. C. LEPAGE AND CO., 1, WHITEFRIAR'S STREET,
FLEET STREET, LONDON.

1859.

CALCUTTA:

PRINTED AT BISHOP'S COLLEGE PRESS.

Dedicated

TO THE

RT. HON. SIDNEY HERBERT, M. P.,

WHOSE ENLIGHTENED

AND PHILANTHROPIC EXERTIONS

FOR THE AMELIORATION

OF THE

MORAL AND PHYSICAL CONDITION

OF THE BRITISH SOLDIER

ENTITLE HIM TO

BE STYLED

“ THE SOLDIER’S FRIEND ”;

IN REGARD TO WHOM

HE WILL STAND HEREAFTER

IN THE SAME RELATION

THAT HOWARD DID TO THE PRISONER,

AND WILBERFORCE TO THE SLAVE.

P R E F A C E.

THE accompanying notes were thrown together a few months ago, in the very brief leisure at the disposal of the writer.

They were originally published in the pages of a local journal, and are now reproduced in consequence of a notice in the Home papers, that a commission is about to enquire into the Sanitary condition of the British Army in India.

It is likewise said that this Commission is to be presided over by the Right Hon'ble Sidney Herbert,

to whom the British Army is already indebted for the most valuable suggestions that have ever been made for its moral and material improvement.

To this eminent statesman and philanthropist, the author, although personally unknown to him, has taken the liberty of dedicating his notes and observations, from a thorough conviction that if they contain aught of value, they will meet with the attentive consideration of the truest and most judicious friend the soldier has ever had.

If they contain nothing worthy of adoption, good will nevertheless result from the discussion of questions of the greatest value and interest at the present moment.

The recent bad feeling shown by some of the recruits of Her Majesty's Indian Army, proves that none but trained and disciplined soldiers should be drafted to India, and that the greatest care in selection should be exercised, before the men are sent from home.

It is impossible to exaggerate the evil influence on the native mind, caused by such disgraceful

exhibitions, as have recently occurred. On the other hand, the ignorance and misconduct of a few undisciplined recruits cannot tarnish the fame of the noble army of which they are not worthy to be members.

The glorious feats of arms which have illustrated the recent struggle in India, have raised Great Britain to a pre-eminence in the scale of nations never yet attained, even in HER unexampled career of prosperity. Single-handed, unaided, immoveable in the midst of the most appalling dangers, the humanity and bravery of the British Soldier have been a beacon to all time, of the indomitable prowess and unshaken fortitude of his race.

The mightiest and most treacherous revolt in history has been crushed, without a stain on the honor and Christianity of the British nation.

Those who have done this deed deserve, and will doubtless obtain, all that a grateful country can bestow.

Their wants need only to be made known to be supplied, and I am satisfied that nothing will be omitted in the investigation now about to be

commenced, that will tend to preserve the life, secure the health, minister to the happiness, and increase the contentment of THE BRITISH SOLDIER IN INDIA.

FORT-WILLIAM :

July 1st, 1859.

THE BRITISH SOLDIER IN INDIA.

INTRODUCTION.

THERE are few, if any, subjects of greater public interest, and in which private sympathy is more largely enlisted, than the state of the British Soldier in India. Not only is he a very costly instrument, but the maintenance of England's supremacy in the East rests so entirely on his prowess and efficiency, as to render his preservation and well-being a matter of national importance.

The soldier is no longer a mere unreasoning machine, recruited from jails and the refuse of the population, scourged into obedience by brutalizing punishments, herded in ill-ventilated dens without the smallest pretensions to comfort and decency, and universally regarded as the black sheep of society. He is now a

steady, intelligent, well-esteemed member of a glorious brotherhood, whose valor, patience under privations, and heroism in circumstances of unparalleled difficulty and danger, have raised the fame of his nation to the highest pinnacle of human glory.

The world's history contains no brighter page than that on which are inscribed the dauntless resolution of Inkermann, the chivalrous daring of Balaklava, the unmatched siege of Delhi, and the almost fabulous defence and relief of Lucknow. Some of the gallant men who achieved those deeds of imperishable memory are still among us. To the best means of preserving them, and their equally brave brethren in arms, against dangers more fatal than the foeman's steel, and perils more destructive than the deadly breach, or the blind fury of their fanatical antagonists—it is my intention to crave the attention of all interested in the matter.

It has been calculated that in all wars of which we have authentic records, the numbers who perish by the sword are infinitesimally small, compared with the hosts who melt away and disappear under the blighting influence of disease and exposure. The effects of the latter are, to a great extent, as preventible as the arrest of the scurvy, that rendered a voyage round the world, almost within the memory of man, a perilous feat, of which few returned to tell the tale.

In a tropical climate, where the destructive agencies banded together to arrest the current of life, and to immolate hecatombs of victims upon the altars of

disease, are infinite and in ceaseless activity : in proportion to the increased risks, should be the protective and preventive measures to neutralize their fatal force. The reports of Royal Commissions, and still more the labors of the soldier's truest, best, and too often his only real friends, the Army Surgeons, have recently thrown much light on all questions connected with what is now termed his *Hygiene*. His clothing, his barracks, his arms, his supplies in war, and his maintenance in peace, have all attracted and forcibly arrested public attention. That much has been done to improve his condition, and with the happiest results, is undeniable. That still more remains to be done, and that the ruling powers are thoroughly alive to the necessity of sparing no cost or pains to protect the lives and minister to the happiness of the defenders of the nation, and the upholders of her honor and empire—is my apology for discussing some of the points connected with the European soldiery in India, that are at the present moment of paramount importance.

They are—his dress and equipments, with special reference to the sun that fells him from above, the miasmatic dews that prostrate him at night, and the lethal influence of those habits which, not without danger at home, are full of peril abroad.

His barrack accommodation, and the means of preventing his falling a prey to the dread ennui that drives him to drink, and renders him an easy prey, in the prime of manhood and vigor, to the fell destroyer, ever ready to seize and consume the victims

of their own *bad* habits, demand the most earnest attention.

His drills, parades, and punishments, as they affect his health, are not of minor interest. These are too frequently lost sight of, or undervalued by his Commanders, always with a prejudicial result.

His food, and the manner of its preparation, which are not without their influence in maintaining his health, or causing some of the diseases which carry him off, deserve consideration.

The wives and children of the soldiery merit attention. Their priceless value to the nation, if properly cared for, is susceptible of rigid demonstration.

I shall treat these subjects in the order mentioned, taking as my text the leading recommendations contained in the work of Julius Jeffreys, a retired Surgeon of the Bengal Army, and an earnest, able, honest laborer in the field of philanthropy and improvement.

Mr. Jeffreys is known to Science as the discoverer of the respirator, and as the founder of extended chemical works at Futtehghur, in which great results were achieved. These have now been swept away, but they exhibited in their full development the boundless resources of this country, and the inestimable moral and material benefits sure to result from the employment of British skill and capital in Indian arts and manufactures. This differs essentially from Utopian schemes of colonizing tropical and alluvial plains, filled to overflowing with a teeming and industrious population, who only need the heads and

purses of Western capitalists to guide their hands to results of boundless wealth and importance.

In this great and good work the British soldier may, by proper management, become an invaluable pioneer, as I shall endeavor anon to show. There is not a regiment in the Service which does not contain skilful artisans well acquainted with every species of handicraft. The mode of turning these wasted and unproductive talents to good account is neither difficult to suggest, nor impossible to attain. Their right direction would be as profitable to the soldier himself as to the ignorant population by whom he is surrounded; and exercise greater influence in weaning him from soul-and-body-destroying habits of idleness, than any other measure which it is possible to suggest.

It would not be right, even in the preliminary mention of the matters I intend to discuss more at length, to omit to pay a tribute of well-deserved praise to the grand old Corporation which has now passed into history, for their treatment of the British soldier. In pay and allowances, in food and clothing, in the maintenance of the wives and children of their European soldiery, in the foundation and endowment of orphanages for their fatherless progeny, in the establishment of sanitarium in the hills for the sickly, and in the multitude of honorable and lucrative employments open to those on the Town Major's list, the late East Indian Company stands, *facile princeps*, as the most liberal and enlightened of all the ruling powers the world has ever seen.

I.

CLOTHING AND EQUIPMENTS OF THE EUROPEAN SOLDIER.

To discuss fully in all their bearings the form, weight, material, and other particulars connected with the clothing of the European soldiery in India, would occupy far more space than I can afford. To point out the general principles that should guide the casing of the outer man in the field and in quarters—in rain and in sunshine—in the hot and in the cold seasons—for exercise and for sentry duties, is all that I can attempt.

The problem to prove is how to fulfil the conditions to which the soldier is exposed, with the greatest economy to the State, and the largest amount of freedom of action to himself, so as to maintain him in health, comfort, and efficiency in the constantly varying circumstances to which he is liable.

It is much to be regretted that, in the Sartorian experiments on a grand scale, to which the costume of the army has of late years been subjected, the appearance, rather than the efficiency of the animated machine, has been consulted. In the æsthetics of dress, the public taste has certainly not advanced

of late years, either in male or female drapery. The pig-tails, pipe-clay, tights, and hessians of the beginning of the century were removed, to give place to the scarcely less unbecoming and inconvenient swallow-tails, choking stocks, father-killer-collars, and bluchers of the last days of the Iron Duke.

These again have been discarded for the tunic, scarf-sash, and head-dress of the British hero as he now is, without sufficient consideration of the only safe rule of guidance in such cases—the thorough adaptation of the means to the end.

Another error of scarcely less magnitude has been the attempt to secure uniformity in all climates, the standard type being the moist, raw, variable atmosphere of sea-girt England.

The broad skirts, ample waistcoats, cavalier boots, and Spanish hats, of the post-Cromwellian period have never since been equalled in picturesque effect or real comfort, notwithstanding the affected dandyism, and anti-puritanical spirit in which they were endued.

The all-important relations of the dress of the soldier to his health were not overlooked by the Sanitary Commission presided over by the Right Hon'ble Sidney Herbert, whose report recently frightened the British public from its propriety, by the revelation of the Queen's Guards—stalwart giants of credit and renown—being more unhealthy, and dying in larger proportion, than the half-starved, sickly, prematurely old, scrofulous progeny of the loom and the mill.

I make no apology for extracting all that is said on the subject of clothing in the report referred to, as it is brief and much to the purpose, although it does not, in my belief, meet all the requirements of the soldier serving in a tropical climate :—

Clothing.—We examined, not only medical but general and other officers, as well as non-commissioned officers, with respect to the articles of clothing now issued to the men. Of late years great improvement has been made in the clothing of the troops. The form of the tunic now adopted affords protection to the hips and belly of the wearer, which the coatee did not. The material is stated to be better than that formerly in use, and the fashion of tight clothing is, for the present at least, discarded. Too much importance cannot be attached to an easy adjustment of the clothing, so as to leave to the respiratory and other organs of the body, as well as to its muscular development, the utmost freedom. Great benefit is stated to have resulted from the use of the canvas frock at the Cape and in the Crimea, in lieu of the cloth tunic. As regards under-clothing, the balance of evidence, both of commanding and medical officers, is in favor of the flannel shirt. But the opinion of the non-commissioned officers examined was decidedly unfavorable to it, principally on the ground of the increased cost of the article, which is one of the necessities kept up at the expense of the soldier.

The quality of the boots is complained of, and it has been suggested that a boot should be adopted, capable of being laced over the trowsers, as the French gaiter is buttoned on the march, so as to prevent the accumulation of wet and mud on the loose trowsers round the ankle.

The stiff stock is condemned by almost every one who has given his opinion on it. The men indeed consider that it looks smart, and some of them wish to keep it, on the understanding, however, that it may be always taken off when

muscular exertion is required. This condition applied to any part of a soldier's dress appears to us to be condemnatory of it. The degree to which men suffer from the use of the stiff stock on parade and other duties is, no doubt, prejudicial to health: on a march they are always allowed to take it off. The complaints made of the horse-hair stocks, which were substituted for the stiff leather stocks, is, that they coil up until they become shapeless, and rise above the collar of the coat.

We do not under-rate the value of a smart and soldier-like appearance, to which the men themselves attach much importance. Serjeant Russell, of the Grenadier Guards, produced before us a light leather stock, which he himself and many of his comrades wear; it is manufactured by Corporal Macdonald, of the 2nd Life Guards, and is so constructed that, while light and flexible to the wearer, it cannot rise above the collar or be displaced from its proper position. This stock appears worthy of trial.

But the most difficult problem to solve in army costume is the head-dress. Formerly, it was a *sine quâ non* that the head-dress should protect the head of the wearer from a sabre-cut. It was looked upon as armour still used for the protection of the head. We doubt the value of this protection if it be purchased at the expense of a degree of weight and of heat likely to prove injurious to far more men than it will ever preserve from sabre wounds. The altered system of warfare, from the daily increasing range of the weapons used, renders the attempted protection of particular parts of the body more than ever useless; and it becomes the more important to consider what character of head-gear will afford the best protection to the head, not from sabre or bullet, but from heat, cold, and wet, and can be worn most conveniently by the soldier on the march, or when sleeping at the bivouac.

Much complaint has been made by witnesses of the peak of the forage cap (now no longer worn), but which had

none of the advantages of a peak, as it either afforded no protection to the eyes, or, by coming down close upon them, created so heated an atmosphere as sensibly to incommode them.

This applies, though in a less degree, to the shako now in use.

The busby is stated, from its form, or want of form, to press in a narrow circle on the man's forehead to a degree very painful to the wearer. There is no reason why the interior of the busby should not be adapted to the form of the human head, though the exterior should still preserve its rectilinear shape.

We are satisfied that the shako is, from its color, weight, material, and form, altogether inapplicable to tropical climates, such as those in which some of our troops pass a great portion of their lives. For them there is no head-dress giving them so efficient a protection to the head, face, and neck as a light eap covered by wadded linen, with a flap hanging down behind, or else a few yards of linen rolled turban-fashion round the forage eap; and we recommend the adoption of some such head-dress in India, and in all climates of similar temperature.

We may add that the practice in the French and Russian Armies is to discard the shako altogether on field service, and to substitute the forage eap.

The great-coat worn in the British Army is of very bad material, of little use against cold, while it readily imbibes and retains wet.

The manner of slinging the knapsack invented by Mr. Berrington appears to possess great advantages. The knapsack can be put on and taken off by the wearer without assistance. It sits easily on the back, and the straps are so placed, as to relieve the arms and chest from that pressure which now causes the men much annoyance. Colonel Lindsay of the Guards describes it as the best knapsack he ever saw put on

a soldier's back, the man wearing being unfettered in his arms, which are free from the numbness caused by the regulation slings.

With much that is sound and sensible, there is a great deal of omission in these recommendations, and some of the suggestions I do not deem desirable for an Indian climate.

The form of the tunic, although far superior to the garments which preceded it, is not so good as that of the native chupkun, in appearance, or in usefulness.

Collars, stocks, and the whole tribe of ligatures which press on the large blood-vessels of the neck, are not only nuisances in the sweltering heat of a mid-day march, but have some share in the production of that great scourge of the soldier in the Indian field, now so well known from its unhappy fatality—sun-stroke, heat-apoplexy, or whatever is the prevailing professional opinion of its nature. The beard of the soldier, which should never be removed, is the best protection for his throat against heat and cold, or sun and shade.

The conquerors of Arrah and Jugdespore, under a chief with brains who put them to a right use, fought in their shirt-sleeves, without bonds or ligatures of any kind.

I have been told that, at the second capture of Rangoon, while the Madras Artillery did battle on the most approved principles of pipe-clay, stocks, and jackets fastened with the regulation buttons, dazzling to nursery maids and children of all ages and sexes,

the Bengal Battery, under the gallant Reid, stripped to the work in the manner dear to sea-dogs and the rough-and-readies, who are resolved to do or die.

A comparison of the results of Eyre's victory with LeGrand's defeat, and of the men struck down by the sun in the Bengal and Madras Batteries in Burmah, will show which is the sound system.

In the cold weather, and for those fair Saxons whose beards are of scanty growth, a scarf affords at once the softest, coolest, warmest, and most comfortable protection that can be invented. It is worn by the sturdy sowars of the Indian Irregular Cavalry, and may be rendered as becoming as it is serviceable.

It is to be hoped that the days of stocks, Prussian collars, and stick-ups of every sort, which precocious Young Englanders' affection and old-fashioned martinets cling to with all the maudlin sentiment of Uncle Toby for his pigtail, are, in India at least, things of the past.

The color, as well as the material of the soldier's coat, is of importance in reference to his health. For state occasions and great exhibitions, when the pomp and circumstances of soldiering are exhibited in mimic war, it is a matter of small consequence whether he looks grand and gorgeous in bright scarlet, or gay and glittering in the various shades of blue and green that adorn the hard-fought field of Aldershatt, or relieve the sober sadness of Wormswood Scrubs.

India is a great standing camp, in which show must be to a great extent sacrificed to use—where all is stern reality, and the life of the soldier is too valuable to be sacrificed to parade or pageantry.

It has long been known that some colors attract and retain heat more rapidly and readily than others. This was established in the early part of the century by the experiments of Dr. Wells, in his researches on Dew.

It has recently attracted attention in France, in reference to the very question I am now considering, the clothing of the soldiery.

In the *Comptes Rendus* of the 16th of December, 1857, is a notice of a paper by Monsieur Coulier, Professor at the Imperial School of Military Medicine, entitled “Experiments upon the Materials which are used for Military Garments.”

The subject was proposed by M. Michael Levy, one of the most distinguished medical officers of the French army before Sebastopol.

M. Coulier says :—

In my experiments I used exclusively the materials worn by soldiers. These materials are of linen, cotton, and various colored cloths. I have successively considered these fabrics as protective agencies—1st, against cold; 2nd, against heat; and 3rd, as bodies destined to absorb the cutaneous perspiration. With respect to this last question, my experiments have led me to consider, that when water penetrated a fabric in sufficient quantities, it is divided into two distinct portions, which I shall call *hygrometric water* and *water of*

interposition. The following considerations have sufficiently proved the correctness of this distinction :—

1st.—Hygrometric water may be absorbed in considerable quantities, without modifying the principal physical properties of the fabric : it can be discovered only with the balance. Water of interposition, on the contrary, powerfully modifies these same properties, and may be perceived by the touch.

2nd.—Hygrometric water can only be removed by pressure ; its weight will not cause it to descend to the lower portions of the stuff : this effect will be produced by water of interposition.

3rd.—Water of interposition will always evaporate completely when the material is placed in an atmosphere which is not saturated with vapour. Hygrometric water, on the contrary, only evaporates entirely in a perfectly dry medium : its weight varies with the hygrometric state of the surrounding atmosphere and the temperature of the fabric.

To estimate the hygrometric water and water of interposition, the fabric must be weighed after 24 hours over quicklime and then over water ; the material being put into the bell-glass, either dry or saturated with water by having been steeped in it for some time. The difference of the weight will at once give the desired results. The average quantities of hygrometric water absorbed have been as follows :—Cotton 0.10 of the weight of the fabrics ; linen 0.15 ; wool 0.18, or 0.20. For water of interposition I obtained the numbers, linen 0.5 ; cotton 0.8 to 0.9 ; wool 1.5.

I have ascertained that, when a fabric removes as hygrometric water the liquid which moistens any surface with which it is in contact, the temperature of the latter does not vary. The water passes off, it is true, in the gaseous state ; but by condensing immediately in the pores of the fabric, it restores the heat absorbed to the latent state.

The conclusions I have drawn from my investigations are as follows :—

1. The color of the dress has no sensible influence on the loss of heat.

2. All fabrics are capable of absorbing in the latent state a certain quantity of hygrometric water ; this quantity, which is very considerable with wool, is less with linen and especially with cotton.

3. This absorption takes place without causing any immediate loss of caloric from the human body.

4. The color of the dress has a great influence on the absorption of solar heat, and a modification of the external surface is sufficient to give all the advantages which white fabrics present in hot climates, whatever be the nature of the material itself.

The fabrics experimented on were cotton for shirting ; cotton for lining tunics ; unbleached linen for lining vests and cloaks ; dark-blue cloth for soldiers' tunics ; madder cloth for soldiers ; cloth for cloaks, bluish iron-grey ; madder cloth for non-commissioned officers, and dark-blue cloth for the same class.

Stripped of their scientific technicality, these important researches show that for under-garments the color is of no consequence, but that for coats and tunics the heat-absorbing colors should be discarded, and that the nearer the approach to white the cooler will be the dress whatever the fabric.

The very worst, hottest, and most uncomfortable colors that could have been selected are the dark-blue of the Artillery and the dark-green of the Rifles.

The new Indian Light Cavalry, better known as the Dumpy Dragoons, have, by an unhappy fatality—

the result most probably of a want of knowledge of the effects of color on the healthiness of clothing—been cased in dark Saxon blue. The old silver-grey of the Native Cavalry, although not originally selected on any such account, was one of the best imaginable colors that could have been pitched upon, and should not have been changed. It is soldierly, light, becoming, and suitable. It is not attractive in the cold grey mists of the morning, and does not stand out in relief in the mid-day or declining sun, so as to draw upon a body of horsemen held in reserve the fire of a hostile battery.

It is singular, and at the same time satisfactory, that the best colors for strategic purposes are those most suited to maintain health in the field. By far the best dressed army I have ever seen is that of Austria, and those who imagine that white and light colors generally are not sufficiently soldierly and characteristic, would change that opinion if they assisted at a review of 20,000 white-coated infantry on the glacis of Vienna.

The color of the ground, vegetation, buildings, and rocks in the seasons when campaigning is likely to occur in India, is neither the brilliant green of the tropical vegetation of Lower Bengal, nor the bright hues seen in the orchard and hedge-rows of Merry England.

The sad, quaker, stone colors, light iron-greys, and neutral tints of unbleached linen, are the least likely to attract the attention of an enemy, or unmask the manœuvres of an approaching column of cavalry or infantry.

Next to pure white, to which the objection is the exhibition of all marks of toil and travail, and the facility with which it attracts and retains dirt, the least heat-absorbing colors are those above-mentioned.

I trust, therefore, that they will be adopted for the British soldier in India.

Another important inference, fairly deducible from the experiments of M. Coulier, is, that woollen garments are best suited for under-clothing, and that they absorb the hygrometric moisture (perspiration) of the body without causing any immediate loss of animal heat. In civil life this is well known to cricketers, rowers, racket-players, and all who undergo violent physical exertion—hence the variety of flannel shirts worn on such occasions. Sailors, as a class, wear similar garments in all latitudes and temperatures. From being formerly one of the most unhealthy classes of men leading a life of toil and exposure, their standard of health and strength is now of the first class, and their mortality is much lower than that of soldiers serving in the same climates.

In the evidence taken by Mr. Sidney Herbert's Committee, the only objection made to flannel by the soldiers was its cost. The most unwise policy pursued towards the soldier is to subject him to deductions from his pay, for necessities essential to the maintenance of his health. The impolicy of allowing the soldier too much money to spend in liquor may readily be obviated by increasing his

pension after approved service. The drunken and dissipated will seldom live to enjoy this ; but to the sober, steady, well-behaved soldier, with a family, it will be a real boon on his return to civil life at home, or in the many colonies where he can settle with advantage.

Modern medical and military testimony is in favor of flannel as the best of under-garments.

Of the ancients, one of its greatest opponents was the late Dr. William Fergusson, who with much humour and eccentricity combined a fund of good common sense, that renders his writings as amusing as they are valuable. He deemed flannel "only allowable to men in health in the bivouacs, and as being an abomination even there ; for the soldier can command neither supply, nor change, nor quality, and its use enervates the young and the healthy ; but, in the field, we must first conquer all our disgusts, and call for its aid, for of all preservatives against camp diseases it is the best. In the barrack, under the cover of a roof, it is worse than superfluous, proving always an accumulation of impurities, sometimes, of contagion, irritating to the skin and alike repugnant to decency and cleanliness."

Against the coarse, rough, irritating material of the time when Dr. Fergusson wrote, I entertain as strong objections as those which he has left on record. But to the finer fabrics, now woven at no greater cost than was paid for the flesh-scratchers of fifty years ago, the same objections do not apply. A flannel

shirt of sufficiently soft texture supersedes the necessity of banians, cholera belts, and all superfluous articles of clothing, which the careless soldier either loses, or is too lazy to change. These shirts should be of light fast colors, that will bear washing, and not show stains readily.

Since I commenced the present notes, the tenth and eleventh numbers of the *Indian Annals of Medical Science* have appeared. They contain two portions of an exhaustive article by Dr. Chevers "on the means of preserving the health of European soldiers in India." The paper of this painstaking and industrious officer is necessarily an abstract of opinions culled from various sources, but tacked together with great skill and judgment. It has anticipated much of what I intended to write on the same subject, and many of its references had, for the same purpose, been marked and consulted by us. Dr. Chevers is so very accurate and trustworthy an authority, that in regard to those authors whose works are not accessible to me, I shall freely borrow from his pages, with this general acknowledgment of the immediate source from which much of my information is obtained. The editors of this excellent professional periodical have done wisely to bring prominently to the notice of the Military Authorities the large amount of the most valuable of all experience, that of the well-trained, conscientious, scientific body to which they belong, which has now been accumulated on the subject of which I am treating.

Dr. Chevers mentions the following articles as forming the soldier's field kit at the present time :—

- | | |
|---|---------------------------------|
| 1 knapsack, 1 canteen complete. | } To be packed in the knapsack. |
| 2 white cotton cap covers. | |
| 1 pair of black trowsers. | |
| 1 ditto blue ditto. | |
| 2 pairs of socks. | |
| 1 blue shirt. | |
| 1 flannel shirt. | |
| 2 pairs of boots. | |
| 1 pair soles and heels. | |
| 2 flannel bands. | |
| Canvas or other frock (if the man is already provided with this article). | |
| 1 great coat, to be folded in the back of the pack. | |
| 2 brushes. | |
| 2 towels. | |
| 1 hold-all complete. | |
| 1 box blacking. | |
| Soap. | |

It appears to be the general opinion of military men, that Berrington's is the best form of knapsack yet invented, as it can be taken off and put on by the wearer without assistance, and exercises no injurious pressure on the arms or chest. I remember to have seen something like this knapsack in the French army, as long ago as at the embarkation of Marshal Gérard's army for the conquest of Algeria. It was slung to the shoulders with a loose strap across the

chest, was adjusted quickly, and left the action of the arms perfectly free.

The form and material of the soldiers' trowsers are not the most desirable that could be selected. However much Punch may laugh at peg-tops, and declare them to be as near an approach to the ribbed balloons of the softer sex as the difference of form and use can accomplish, I have no doubt that the loose, puckered pantaloon of the Zouave, with its pockets, strap and buckle, and peculiar facilities for various purposes not necessary to detail, are far superior to the straight-cut, and tight German fit of the casing of the nether man still worn in the British Army.

The late Duke of Orleans, in the expedition against Constantine, found that the soldiers who fell into the rear on the line of march, were frequently cut to pieces by the swift and wary Arabs, before they could adjust the disorder of their garments.

By a very simple device, the evil was remedied, and, on field service, the same device should be adopted in our army. Any officer who served with the French at Sebastopol well know to what I refer. It is only possible with a loose garment, having folds in its formation. It would be impossible with the present trowsers of the English soldier. The additional protection to the loins and abdominal viscera afforded by the French trowser would be no mean addition to its other advantages in the variable climate of India. The eye would soon become accustomed to it, as it is in reality far more becoming than any straight-cut garment.

The material should be stout, serviceable, well-shrunk flannel, for wet or cold weather, and strong duck or linen for the hot season.

The gaiter of the Zouave should invariably be worn in the field, to prevent the accumulation of mud or dust about the feet and legs of the soldier when he comes off a march.

The socks should, at all seasons of the year, have woollen feet, woven to cotton legs. Many fevers, liver complaints, rheumatic attacks, and internal congestions, would be prevented by the protection of the feet in the manner suggested. The fabric known as Balbriggan hose is admirably adapted for the purpose, and, with large contracts given to capitalists of character, might be made at a comparatively small cost.

In addition to the spare soles and heels, the soldier should have one pair of water-proof ankle-boots, and one pair, either of untanned leather or canvas, for dry, hot, dusty weather. Black leather attracts heat too forcibly to be worn with comfort in the sun.

But the chief protection of the foot of a marching man consists in the formation of the sole of the boot, which is usually most clumsy and destructive of ease and comfort. In addition to being of sufficient thickness, it should project beyond the upper leather from the toes to near the ankle seams, by which the foot will be secured from injury to an extent of which no idea can be formed by those who have not been accustomed to walk on rocky or uneven ground. This may seem to be a small matter, but it is not so in

reality. One of the greatest warriors the world has ever seen, declared that victories are won as much by legs as by arms. Of the truth of this *dictum* we have had ample evidence in the campaigns against the fleet-footed mutineers, whose heels have saved their heads more than their hands, and have rendered some of our greatest victories comparatively bloodless and empty triumphs. Historians have not hesitated to base arguments of the physical degeneracy of the modern, as compared with the ancient soldier, upon the diminished marching power of the former. We all know how this argument was disposed of by Napier in his brilliant episode on the Light Division in the Peninsula. The sandalled soles of the old Roman soldier nevertheless, of which the shoe of the Highlander is a bad imitation, were far more efficient aids to rapid locomotion, than the contract boots now worn by the soldier.

None of the writers or committees on the clothing of the European soldiery, have sufficiently considered this point.

The great-coat of the soldier needs a thorough change. It is at present a ponderous sponge, which, by keeping moisture long in contact with the body, is, in wet weather, productive of far more evil than good. It would be very easy to render cloth waterproof, without altogether destroying its porous, and consequently, ventilating texture. It should be so constructed as to form a blanket in the bivouac, a defence against cold and wet on outlying duties, and a serviceable outer-garment at all times in which it

need be worn, whether the soldier be actively engaged in fighting, or passively pacing at his post or picket.

The scarf now worn by officers and non-commissioned officers is unmeaning and unbecoming, serving no purpose of ornament or use that I can discover.

If worn round the waist, it at once performs the functions of a cummerbund or cholera belt ; is a most valuable protection to the stomach, liver and spleen ; is really ornamental, concealing the most unbecoming portion of a soldier's dress, and thus subserving two important objects. The soldier should be provided with it, as well as the officer ; it will often prove of use to wounded men in the field, and being an ordinary portion of the regular costume of the soldier, would not be liable to be constantly thrown aside, which is the fate of the clumsy cholera belt.

I now come to the head-dress of the soldier, which I have purposely deferred to the last, as it is by far the most difficult point to determine.

All parties unite in condemning the shako. Bearskins are disposed of by moist and damp. Brass helmets kill by their weight and heat. The Highlander's bonnet will soon expend itself, if it do not destroy the wearer.

The Home Commission and Dr. Chevers concur in recommending the forage cap with a French peak, and a quilted white cover, as the best device that can be discovered.

From this opinion I most emphatically dissent, as the covered forage cap does not fulfil some of the

most essential conditions of a head-dress, while it is at best a very inefficient protection against the direct rays of the sun.

“A head-dress, to be effective,” says Mr. Jeffreys, “should possess such resisting power as to ward off entirely the whole rays of the sun throughout an exposure to its action of any duration ; and not only from the skull, but also from the sides of the head, face and neck. It ought also to transmit so copious a ventilation over the head as to encourage the perspiration to evaporate freely from it ; and yet with a provision, by which, in cold weather, the circulation of air could be at once reduced and cut off. At the same time, such a head-dress should be no more cumbrous than was necessary to fulfil all those conditions.”

Mr. Jeffreys goes on to argue that the mere weight is of little consequence, if properly poised, and not made to rest by pressure on the forehead or occiput, and that a constant weight of two pounds can be easily borne, if carefully adjusted.

I am not prepared fully to assent to this, although there is much reason and some sense in it.

The real objection to the covered forage cap is, that it affords incomplete temporary protection, and admits of no evaporation from the surface of the head. It is, in fact, a mere make-shift, acting only for a brief period from its slow conduction of heat which it does not subsequently readily part with, so that it ultimately causes an amount of morbid heat about the cranium adequate to boil

the blood, and addle the brains, of the thickest skulled clodpole who ever took the shilling and shouldered a musket.

The late Mr. Piddington, a man of much science and more common sense, suggested a simple means of correcting the non-ventilating defect of the cotton-covered forage cap. It was by placing a rim of very thin bamboo or cane within the cap, so as to admit the free access of air to the head. The chief objection to this proposal is, that when the man lies down and uses his head-dress as a night-cap, the bamboo rim must be removed, and would most probably be lost.

Mr. Jeffreys advocates the introduction of a very complicated helmet of polished tin without, sola within, and provided with the means of dodging heat and driving away cold on the most approved scientific principles.

The tin could never keep its polish, on which the free radiation and rapid removal of heat depend, and the whole thing would soon fall to pieces in the rough treatment of a campaign.

In a light strong metal, susceptible of a high polish, and capable of perfect ventilation, the most efficient field head-dress for all purposes, save that of a night-cap, will ultimately be found. This metal is Aluminium, which is as light as cork, as strong and malleable as iron, receives as bright a polish as silver, and is as indestructible as platinum. It will prove as versatile in its applications among metals, as gutta-percha has done among vegetable bodies.

It can now be prepared more cheaply than silver, and before five more years have passed, will be reduced to the cost of tin. He would be a bold man who could predicate the thousand-and-one purposes to which so paradoxical and extraordinary a substance can be turned.

It may displace iron and copper in ships, and in all structures, where great strength, indestructibility, and light weight are essential, as soon as its cost is reduced to that of the baser metals.

It will supersede glass, porcelain, and all frangible materials, where strength and indestructibility, by ordinary chemical agencies, are essential.

And the warrior, instead of doing battle in the tin saucepan and imbricated coat of Mr. Jeffreys, giving as musical indications of his presence as the damsel with rings on her fingers and bells on her toes, may really find his fastest friend in the metal extracted from the common alum of commerce.

By no means its least recommendation will be its nearly inexhaustible supply.

Some faint idea may be formed of the amount of heat at present endured, by the following extract from the paper of Dr. Chevers above referred to :—

“Colonel Sykes has published the following table, which is the result of a series of experiments instituted in Nagpore, at the request of Dr. Anderson, of the Artillery, to ascertain the advantage derived

“from the use of white cover worn in the sun, over
“the different military caps and turbans :—

In the sun after half an hour's exposure.

	Without a white cover.	With a white cover.
Horse Artillery helmet	117° F	—
Foot Artillery dress-cap	122° „	—
Peaked Kilmarnock bonnet	119° „	113° F.
Sepoys' glazed turban	130° „	111° „

Experiment with a wet rag inside head-gear.

Horse Artillery helmet	102° „	—
Foot Artillery dress-cap	114° „	—
Peaked Kilmarnock bonnet	108° „	99° „
Sepoys' glazed turban ..	106° „	102° „

In the shade, the use of the white cover reduced a thermometer, placed under the cap, two degrees.

Mr. J. R. Bedford made a series of experiments, the result of which showed that, in the beginning of May, at 10 A. M. the thermometer in the sun's rays standing at 106°, the temperature inside a black silk hat was 97°; in a blue cloth forage cap, with a white cover, 94°; in a plain sola hat 92°, and inside a sola hat, covered with six folds of white cloth, 90°.

The head-dress most in vogue at the siege of Delhi, and best liked by the soldiers, was a well-shaped helmet of untanned Cawnpore leather, with a white cover and curtain. It had a large ventilating aperture at the crest, to which, in brass helmets, a plume is attached with a horse-hair tail, to ward off sabre cuts from the neck. It was not very light, but sat

comfortably on the head, was flexible, and bore any amount of battering without serious damage. It was waterproof, which the forage cap is not.

The lightest head-dress we have yet seen is formed of a thin, flexible cane frame-work, covered with quilted cotton, with an aperture at the crest, and a neck curtain behind. Its pliability renders it nearly as good a night-cap as the forage cap—it is well ventilated, and is built at Allahabad complete for a rupee.

It may be made of the shape of any helmet, and combines the many advantages of lightness, cheapness, flexibility, free ventilation, and susceptibility of much rough usage without damage.

It is only not water-proof, but may be rendered impervious to moisture by a white oil-skin cover, or any similar anti-hygrometric device.

So much for the dress of the soldier. I shall next consider his arms and accoutrements.

II.

HIS ARMS AND ACCOUTREMENTS.

I find, on carefully referring to all available authorities, that this question is in too transition a state to admit of its being discussed with advantage at present. The improvements in the construction of small arms, resulting from the labours of Major Minié in France, of Colonel Colt and Mr. Sharp in America, of General Jacob in this country, and of Messrs. Lancaster, Whitworth, Greener, and others at home, have altogether unsettled ancient notions on the subject, and have not yet determined the form of arm most suitable for all climates and varieties of services.

The extreme range and explosive result of General Jacob's rifle shell are only susceptible of limited application, and are not likely to be generally employed.

I remember to have heard of experiments successfully made in this direction by the late Captain Norton, of the Royal Army, many years ago, when Warner's long range was so much talked of, and General Jacob had most probably not thought of the matter. If I remember rightly, some account of Capt. Norton's experiments will be found in the *United*

Service Journal and *Military Magazines* of twenty-five years ago.

There can be little doubt that the Enfield Rifle is an imperfect instrument, and, like all others of its class, will be superseded by breech-loading weapons.

I recently fell in with one of Walker's filibusters, who mentioned to us that the whole of that chieftain's force was armed with Sharp's rifle, a light, serviceable, simple weapon, easily kept in order, absolutely without recoil, extremely accurate at six hundred yards and upwards, and capable, without flurry or hurry, of being fired from twelve to fifteen times in a minute.

The Costa Ricans could never stand Walker's fire, and most of the success of the freebooter was attributed by his follower to the rapidity and accuracy of the small American rifles.

I am glad to learn that it is to form the carbine of the Indian Light Cavalry, and I have no doubt that increased in weight, range, and length, so as to afford a secure hold to a bayonet, it will prove a most formidable weapon in the hands of the British Infantry.

In the French Navy and Cavalry, a revolving pistol, breech-loading, with copper capsules, manufactured by Lefauchaux, has recently been introduced. It is easy to make the cartridge water-proof, but all such inventions as copper capsules are unsuited for a country where their supply would be difficult and uncertain.

The regulation sabre of our cavalry is a clumsy, inefficient weapon, and can never keep a fine edge in

a steel scabbard. Its form is not suited for the real work of cavalry, as was seen in the encounter of the 14th Dragoons with the Seikh Goorchuras at Ramnuggur.

The accoutrements of the soldier in India should be as much adapted to the climate as his dress. All black and other glazes of dark color are inadmissible, because they attract heat, and most of them are liable to chemical changes from the combined action of heat and moisture.

The best material for the outer casing of knapsacks, cartouche-boxes, cap-pouches, bayonet-sheaths, and similar accoutrements would be either untanned leather, or fine canvas rendered waterproof. They are easily kept clean, do not attract heat, are cheap, and last much longer than glazed leather. All blacking materials for boots or any other purpose are dirty abominations, and should be discarded. Pipeclay is equally objectionable, and more unwholesome.

This, I am fully aware, is a very superficial view of a most important department of the economy of the European soldier. The fact is, that in matters relating to arms and equipments, there is less difference necessary for a tropical climate than in the other departments of which I have treated. My object is to discuss the management and relations of the soldier with strict regard to the climate of India, and the peculiar circumstances which therefrom and thereby render particular treatment requisite. Hence I have dwelt but lightly upon what is not matter of special concern to the Europeans in Hindostan.

III.

HIS BARRACKS.

Millions of money have been expended on, and thousands of lives have been sacrificed in, the barracks of India—yet we are still without a model lodging for the British soldier within the limits of the brightest jewel in the diadem of the Empress of Hindostan. The barracks in Fort William are now palaces, and those in the Punjab are prodigal of space, but neither are altogether what they should be, to secure the highest standard of health to their inmates.

There has been no want of will, or grudging of cost, on the part of the Government, to render the habitation of the soldier all that could be desired ; yet the efforts in this desirable direction have been a series of costly failures, down to the very last.

To what is this due ?

I have not the slightest hesitation in attributing it to an unwise neglect of such sanitary laws as are now tolerably well established, and to a disregard of the opinions of the only class of men capable of giving sound counsel in such cases.

One of the most mischievous effects of the popular education of the present day, is the conceit that

causes the surface knowledge of Penny Cyclopædias and Manuals of Useful Information to be mistaken for the sound acquaintance with science, that years of patient study can alone communicate. There are no royal roads to learning, and the sooner the empty pretensions to this spurious wisdom are exploded, the better it will be for the real interest of the State.

Of all classes of pretenders, the most perverse, self-willed, impracticable, and unreasonable, is the old type of military martinet, who regard regimental surgeons as necessary nuisances, consider physic fit only to be thrown to dogs, and laugh at all sanitary precautions as mollycoddling—unfitting the soldier for the rough duties of the field.

Yet, what more striking example of the soundness of the sanitary principles now well established, has the world ever seen, than the difference in the state of the Crimean Army during the unhappy winter of 1854 and at the close of the campaign?

In the former ancient custom and routine had it all their own way, and the overtaken, ill-protected starved host slumber peacefully on the heights, to which their valor has bequeathed an imperishable name.

In the latter, common sense, medical experience, and the indignant anger of an outraged nation, whose prestige had well nigh been destroyed, prevailed.

The arts of peace were applied to the operations of war, and the end was seen in the marshalling of a stout, well-fed, healthy host, in good heart and in good case. Ready and able were they, had the contest

continued, to vindicate the honor of their country, and to pluck the laurel from the braggart brows of a brave but vain nation, who will not cease, to the end of time, to point their moral and adorn their tale, with the story of the brilliant success of the Malakoff, and the disgraceful defeat of the Redan.

Far be it from me to rob our gallant allies of the smallest particle of renown to which their fiery courage and admirable soldiership fairly entitled them. But, let them not elevate themselves at the expense of an equally brave and far more generous rival, whose ill-success was entirely due to a blind disregard of the simplest sanitary precautions, and a perverse pursuit of exploded fallacies and ruinous routine.

Death at last forsook the British camp, fairly exorcised by the Doctor, whose immediate occupation was gone. The old Greek apothegm,

A wise physician, skilled our wounds to heal,
Is more than armies to the public weal.

was again realized. It is to be hoped that the lesson will not be soon forgotten.

This then brings me to the sanitary principles that should regulate the construction of dwellings for the great European army, that must now become a permanent portion of the Indian establishment.

The soldier should sleep in apartments well raised from the ground. The ventilation of his dwelling should be scrupulously regulated. While the direct rays of the scorching sun are carefully excluded, the diffused light of day should have free admission. The arrangements for washing and conservancy should

be such as to supply abundantly pure water, and carefully remove all effete matters. His dining-room, work-shop, and place of healthy recreation should be separate from his sleeping apartment. His library should be near at hand, and all the arrangements for his housing should be such as to secure his speedy acclimation, if such a process be possible, as I believe it to be, in spite of the grave doubts of eminent authorities.

The apparatus for cooking his food should be such as will render it best fitted for assimilation, at the smallest expenditure of fuel and labor.

First, then, with regard to his elevation from the ground.

Upon this point much important information has been collected in the last few years. The War Office reports show that, in the West Indies, the standard of health among troops sleeping in an upper-floor was much higher than among those dwelling near the ground. The investigations of many eminent physicians, in every part of the world, have demonstrated that malaria hugs the ground and seldom rises much above the surface. In unwholesome teraies, and in all marshy countries, the habitations of the natives are raised on posts high above the ground, where no human being could exist near its surface.

The very first remarks of Mr. Jeffreys, in his chapter on the housing of British troops in India, indicate that it is undesirable to lodge the soldier on a ground-floor. His observations are so just and apposite as to deserve quotation. He states that "many

“ reasons may be adduced against the lodgment of
“ European soldiers on the ground-floor, which was
“ universal when I was in India, and, I believe, is
“ so still, and many and great advantages demon-
“ strate in favor of an upper-floor housing of them. In
“ the first place, every person who has studied the
“ habitudes of malaria, well knows how exceedingly
“ more rife it is, especially the malaria generating the
“ fever of India, near the surface of the ground. The
“ *Natives*, though as such, they ought to be more
“ exempt, are much more prone to attacks of fever,
“ owing to their sleeping close to the ground, than
“ the Europeans, who lie at a somewhat higher level,
“ even when both are equally under shelter. Other
“ causes, no doubt, are also in operation, but this is
“ a main one.

“ In some countries the inhabitants sleeping on an
“ upper-floor are almost exempt from the effects of
“ malaria, which is decimating ground-sleepers. The
“ wealthier inhabitants of Calcutta live entirely on the
“ upper-floors of their houses. Moreover, the glare
“ from the ground and from the walls enclosing pre-
“ mises which are not spacious, aggravates the heat of
“ a ground-floor materially, and renders it painful to
“ keep venetians open, and to look out even towards
“ the shady side of a house ; and the look-out upon
“ an ever-present and glaring mud-wall often enclos-
“ ing a barrack ground is but a dull and dispiriting
“ sight for the soldier. Yet, near a town, with his
“ present habits, he cannot in safety be entrusted in
“ unenclosed barracks. Again wind, which is so

“much longed for, and so necessary during the hotter
“seasons, meets with many impediments near the
“ground, which do not exist ten or twenty feet up.
“A refreshing breeze may often be felt at an up-stairs
“window, when a dead calm prevails below. Moreover,
“if quartered up-stairs, the soldier could not always be
“truanting into the sun and glare of the barrack-yard,
“nor would he be tempted to do so, when he had
“spacious up-stairs verandahs to walk and lounge in,
“with an open and cheerful view over the canton-
“ments.”

Removal from a lower to an upper-room, has, in the East and West Indies, arrested fevers, accelerated convalescence, and not unfrequently saved life.

The most healthy Indian barracks that I have seen are a collection of straggling wooden barns, raised some feet above the ground, at Moulmein. They are surrounded by verandahs, and have shingle roofs. Although rude in construction, and susceptible of considerable improvement, they are far superior to the magnificent and princely range of quarters for the European artillery and infantry at Meean-Meer. The Dalhousie and Queen's barracks in Fort William cannot, for a moment, be compared with them, in real usefulness and salubrity.

It is not costly palaces that are needed, but the simplest construction, fulfilling the conditions above enumerated, that is requisite.

It has now been proved in Europe, in regard to hospitals, jails, and other institutions, in which large bodies of men are located, that to lodge them in

great masses under one roof, is essentially unwholesome.

It is cheaper, more healthy, and more suitable, to break the great masses into small manageable blocks, each complete in itself.

In fortresses, where space is restricted, it may be necessary to pile one story above another, until the structure towers high above the surrounding plain, as has been done in Fort William.

Strategically this a blunder. The buildings thus towering towards the sky are so many targets, which, in these days of long ranges, would soon crumble under the fire of an enterprising enemy or an Armstrong gun.

In other respects they are also a mistake. Superior as they undoubtedly are to their predecessors, nothing will ever make Fort William a healthy garrison.

The force retained in the *enceinte* of the fortress should never exceed a thousand men. These should be entirely European, and would amply suffice for the duties of the garrison, as well as to prevent a *coup de main*.

The remainder of the Presidency Division should be cantoned at Barrackpore, Dum-Dum, and Ballygunge, in much more simple and less expensive barracks, constructed and arranged on the principle to be mentioned hereinafter. Connected by tram ways, the electric telegraph, and river communication, with the fort, the whole should be capable of being concentrated in two hours, to put down any outbreak, however formidable. The arsenal and materiel

would thus always be secure; the city would be effectually overawed and protected; the bulk of the soldiery would be removed from the temptations of a licentious and polluted city; and the mortality of the Presidency Division would be considerably diminished.

The thorough ventilation of the soldiers' quarters, however constructed, is of the utmost consequence, and to the neglect or imperfection of the free ingress and egress of pure, fresh air, more mortality is probably due than to any other single cause.

It has been determined in England, that the minimum space necessary for healthy respiration is 1,000 cubic feet. At least the same amount is requisite in India, where, during the greater part of the year, the rarefaction of the air causes the proportion of oxygen, in a given space, to be less than in the more condensed atmosphere of lower temperature.

All barracks and dwellings should present their most extended aspects to the prevailing winds. These are usually steady and uniform. In Lower Bengal their direction is very nearly north and south.

The buildings should be at such distances from each other, from trees and topes, and from all causes of obstruction, as to secure at all times the free access of every current of air that blows.

Both of these cardinal points of health seem to have been somewhat disregarded in the new barracks at Barrackpore, some of which run north and south, others east and west.

For perfect ventilation, in addition to the free perflation of air, its ready escape by the roof should

be provided for. No mere current of air traversing a building can remove the impurities which stagnate in corners and angles, and lodge near the ceiling of every unventilated room. For this reason flat, terraced roofs, if not furnished with skylights or other ventilators, are objectionable. The scientific explanation of all this is simple enough, but would occupy too much space to detail in a record which is of necessity brief, and confined to the broad features of construction needful for health.

A double roof, open at the ridge pole, with gable ends, is the most efficient for ventilation—if it can be rendered water-proof and incombustible.

A well-burnt glazed tile ought to secure both of those conditions, and there should be no difficulty in fixing it upon the light frame-work of the iron barracks sent from Europe. The height of the room is of some consequence to secure coolness, as well as a sufficient supply of air.

The barrack should have broad verandahs on all sides. These verandahs should not be constructed on the ordinary principle of excluding light and air, both being essential to health. The blanched, etiolated appearance of those who shut themselves up in darkness, is an evident proof of the unwholesomeness of the practice. The direct rays of the sun are sufficiently excluded by closing the venetians, and this should only be done where the glare falls. The more open the rest is kept, the better for health.

I remember, some years since, to have seen in a continental journal an account of a series of experiments

conducted in the barracks and military hospitals of Moscow, in which it was shown that the northern aspect, where the sun's rays do not fall, was invariably the most unwholesome, both in health and disease.

Exactly the same phenomenon occurs in hot-houses. All horticulturists know the value in ripening fruits, and ensuring the healthy, vigorous growth of plants, of the aspect in which they are placed.

With regard to artificial ventilation, all thermanitidotes, *khushkus* tatties, and similar contrivances, are inapplicable to barracks. Punkahs, pulled by machinery, will alone secure the rapid change of heated air, and, by aiding evaporation, cool down the surface.

The sleeping apartment of the soldier should never, in any circumstances, be used for any other purpose, and besides his bed and box, should contain nothing but his arm-racks. All eating, drinking, smoking, and other practices calculated to harbour dirt, should be strictly interdicted.

The bathing and washing-rooms should all be downstairs; and every barrack should be provided with a plunge-bath, particularly in the Upper Provinces.

The dining-rooms, work-shops, skittle-alleys, reading-rooms, should all be on the ground-floor, which should, as in the barracks in Fort William, be arched and open on all sides.

The soldier, while thus under cover protected from the sun, would be, to a certain extent, in the open air, and would be weaned from the present pernicious practice of constantly lounging, half-dressed, upon his bed, smoking, spitting, eating and drinking, and

thus polluting an apartment which cannot be kept too free from impurities of all kinds. They certainly are not so at present, in spite of the care of the most particular commanding officers.

The cook-rooms should be connected with the barracks by covered ways, and all be provided with American stoves, which are so far superior to Captain Grant's, that they can grill and roast in addition to boiling, baking, and stewing. These operations should, in turn, be superintended by the soldiers themselves, instead of being entrusted to native cooks.

In the French Army a part of the professional training of every soldier is the art of cookery. A regular proficient cook is attached to every company, who teaches each recruit in turn ; hence the proverbial readiness with which a French soldier lives in luxury where a Briton starves.

In the barracks of St. Denis, in the Island of Reunion, the kitchen is circular, with one large chimney in the centre, and around it the distinct cooking places of every company, each under the charge of its own cook and assistants.

The great curse of the soldier's life in quarters everywhere is idleness, with its attendant evil spirit—ennui. To compel every man in turn to direct his attention to cooking, would afford him occupation, which would soon become popular from its results.

That it can be practised without detriment to health, in even a tropical climate, may be seen in the Calcutta convent, where every household duty is done by delicate females, who are none the worse for it.

The European soldier and his wife are far too much pampered in India. With one or two exceptions, every domestic duty in barracks connected with cleaning their rooms, making their beds, washing, cooking, and the like, should be done by themselves. All this would occupy but a small portion of the dreary day, and still leave a large margin for idleness.

A great defect in the English regimental system is the absence of a fencing-room. Single-sticks, the gloves, foils, and all similar means of practising the art of defence, should be encouraged to the utmost, instead of being utterly neglected by both officers and men, as they are at present.

To every barrack should be attached a large garden for fruits, flowers, and vegetables. It should be cultivated by the men themselves, for there is probably not a regiment in the service in which individuals are not to be found possessed of practical acquaintance with agriculture and horticulture. A racket-court, skittle alley, ground for quoits, and for cricket, and a regular gymnasium, should also form an integral part of the compound of every regiment. By planting a row of large shady trees, such as are to be seen on the Barrackpore road, many of these out-door amusements could be pursued in the shade, at all seasons of the year. Even in the rains there are dry intervals, when the soldier should be encouraged to be in the open air, as it can be done without risk.

Among the additions to the Barracks of the European soldiery, there is nothing, in my humble judgment that would conduce more to health and

economy, as well as afford congenial occupation, than the establishment of a farm. The quality of the meat ordinarily procurable from the Commissariat is far from satisfactory. Its cost is enormous. That cattle and sheep can, at very moderate cost, be well fed, is shown in the mutton clubs established in nearly every station of the Bengal Presidency.

To improve the breed of cattle for commissariat as well as for agricultural purposes, is a matter of the highest importance, and in no way could this be accomplished with greater economy and certainty of success, than in connection with the European Soldiery.

The farm would be accompanied by the dairy—good butter, milk, and cheese could be produced at a cost that would cause some of the money now wasted in the grog-shop to be invested in the purchase of these simple luxuries, from which the Soldier is, at present, practically debarred.

In the event of war breaking out, the Government farms would furnish a supply of healthy, well fed, strong cattle, for draught as well as for consumption. The lean kine generally procurable in such circumstances are mere skin and bone, tough, tenacious, and extremely deficient in nutriment. No skill in preparation can make the flesh palatable, or capable of repairing the exhausted energies of men undergoing great physical exertion and exposure.

My plan of barracks then will be the following:—

Each barrack should contain one company, and no more, due distinction and provision being made for married and single men. It should be raised on

arches to a height of at least 12 feet, the ground-floor being occupied by bathing and washing-rooms in the angles—dining, reading, fencing, and work rooms in the body, with verandahs all round for skittles, smoking, examination of arms on wet day, &c., &c.

The upper-floor should contain the sleeping apartments, with the quarters of the non-commissioned officers in the angles, and verandahs on all sides as below, but with no screens within 10 feet of the floor. This range should be from 18 to 20 feet in height, with pitched roofs, ventilated throughout, and double ceilings, if necessary, to prevent excessive heating during the hot winds.

Each block should have its own cook-rooms and out-offices of all kinds complete, and the whole should have one great garden surrounding it, with a farm-yard as well as a grand parade.

It should have just enough trees to secure a large shady avenue like those in Fort William and at Chinsurah, but these should not be so placed as to interfere with ventilation.

The officers' quarters and hospital, as in the French Army, should always be in barracks near their men, and the whole *enceinte*, covering several acres, should be surrounded by a low ramp and ditch. These can easily be kept in repair by the men themselves, and would render every barrack a defensible position against any number of natives without artillery, an arm in the use of which it is to be hoped they will never again be permitted to become proficient. Recent experience has shown that earth-works are the

cheapest and most efficient of fortifications, easily constructed, readily repaired, and impregnable in the hands of Europeans opposed to Natives with or without guns.

Whatever may be the cost of such measures, I am satisfied that it would be amply repaid in the improved health of the soldier.

With old barracks, such as those of Chinsurah, Berhampore, Dinapore, and similar places, it would be impossible to change without entirely rebuilding them. But at Lucknow, Allahabad, Agra, Delhi, and any new stations that may be formed in Oude, or elsewhere, the most ample space should be secured to build such barracks as I have indicated above.

The next point to consider is, as to whether the European soldier can be acclimatized in India, and, if so, how this desirable object is to be effected.

IV.

CAN HE BE ACCLIMATED, AND, IF SO, HOW AND TO WHAT EXTENT?

Upon the folly and uselessness of sending growing lads on service, or exposing them at that dangerous age to the risks of a tropical climate, all authorities, military as well as medical, are agreed ; yet in spite of all that has been written and said on the subject, the practice continues, and sad is the sacrifice of life in consequence.

In times of great urgency, as on the breaking out of war in the Crimea and the unexpected occurrence of the unparalleled mutiny now near its close, the necessity that has no law must be obeyed. Of all false economies, the worst, however, is, for a great nation like England ever to be unprepared for every contingency. With Colonies in every quarter of the globe, some of them gradually expanding into empires, and with a commerce that covers every corner of the Ocean, she has material and moral interests at stake, far too great to run the risk of even the smallest and most temporary check. With Cherbourg within a few miles of her coast, an irritable nation of restless spirits ready for any mad enterprise, to avenge some doubtful point of imaginary honor,

close at hand, and with enemies in every despotic country who would be only too happy to assist in her overthrow—to be without a thoroughly manned and trained Channel fleet, and the nucleus of a strong and efficient army at home, is carrying economy and rashness to the very verge of insanity. The best of all defences is preparation.

The wear and tear of the European force in India and the Colonies will need hereafter an annual expenditure of not less than 20,000 men. At Aldershott, Shorncliffe, the Curragh of Kildare, and other places, the means now exist of constantly keeping a force of double the dimensions mentioned under training, so as to make them in the shortest possible period proficient, well-drilled, hardy, serviceable soldiers, capable of rough handling, without risk of extinction.

A disadvantage of the present plan, of no mean amount, is the hurry with which the soldier when once landed in India, must be made ready for the field. The recruits of the First Bengal Fusiliers joined at or just before the siege of Delhi, and were taught to load and fire in the presence of the enemy. The Dumpy Dragoons were urgently required, yet not one of them had been on the back of a horse before he embarked. They are said to be still without saddles, and to be utterly innocent of equitation. The disadvantages of tropical training are clearly pointed out in the subjoined extract from the paper of Dr. Chevers.

Sir James Annesley is very explicit on this point. He remarks :—" Every soldier or recruit who goes

to India should be master of all his exercises and perfect in his duties, so as to render his exercise, on his first arrival, rather salutary than fatiguing, as it now is, and until he becomes more accustomed to the habits of an Indian life. Drills, absolutely necessary to make the young recruit a soldier, would, we conceive, be much better practised in England. This is a measure which would, doubtless, save the lives of many who fall sacrifices to the present" (this was written in 1828) "system of excessive drilling in India before they can be properly qualified for their duty." Again, he remarks that many regiments on their first arrival in India suffer from excessive drilling in the heat of the morning. They are generally out between 5 and 6 o'clock, and return between 7 and 8. The sun at this time of the day is often exceedingly oppressive, and, consequently, men often fall down in the ranks and are taken to the hospital.

On this subject Dr. John Macpherson remarks with justice:—"We think, indeed, that it is a mistake to send men out to India who are not thoroughly drilled. If the greatest mortality be not among them, certainly the greatest number of sick is to be found among recruits learning their drill. If they are kept longer at home, many of the men, who, in the course of a few years, die of consumption, or are sent back at the expense of Government for insanity or epilepsy, and men who are found incapable of learning their drill, yet who are able to pass muster before an examining surgeon, would be discovered to

be unfit for service. In short we fully agree with many French and English writers, that raw recruits should not be sent to the tropics.

“ It is self-evident that, in drilling, the muscular system of the recruit is, at first, severely tried. No one will doubt this who has seen the shambling, loose-jointed, round-shouldered clod-pole transformed, by a few weeks’ drill, into the erect, straight-limbed, symmetrical, open-chested soldier. This physical trial, accompanied as it generally is by not a little mental vexation, under the discipline of the drill-serjeant, is never thoroughly well borne, except by recruits of the best constitution and greatest aptitude. When it is further remembered that drill is often inflicted as a punishment, and that, in this country, it is always liable to be hastened when corps, containing many recruits, are required for any particular service, it must be evident that the practice is attended with risk to health. Doubtless, as a general rule, great discretion is exercised by Commanding Officers in sparing their recruits from excessive trial in this respect ; still many examples, like that of H. M.’s 13th Foot already referred to, might be mentioned ; and instances have not unfrequently occurred in which Medical Officers have found it necessary to remonstrate against the excessive drilling of young and unseasoned troops.”

The absolute accuracy of this reasoning can neither be disputed nor denied, for the same results have been noted in other tropical countries to which Europeans have been translated, long since.

To train these troops at the Cape, St. Helena, or in Australia, as intermediate in climate, and thus preparative for India, is an absolute fallacy.

These Colonies are all more dissipated than the mother-country, and I suspect, when the sanitary returns of the past year are made up, that the Cape and Australian regiments will be found to have suffered more than those sent direct from Home.

The same objection does not apply to the Mediterranean stations, which may become most useful intermediate training places for troops destined to serve in the limits of the late East India Company's Empire.

But the first and most important consideration is the proper selection of subjects suited for a soldier's life, of such age as will fit them, by proper feeding and exercise, to become stalwart men at arms. Beyond the goose step and extension movements, no systematic attempts are made to develop the frame of the growing recruit by gymnastic exercises. This is a vital mistake, and cannot be too soon corrected. The natural tendency of the Anglo-Saxon race is to excel in physical exertion. Our sailors are the most agile, our miners the most enduring, our navvies the strongest, our wrestlers the toughest, and our cricketers and golfers the most hard-hitting and nimble in the world. With suitable training, there is no reason why the marching powers of our soldiers should not be equal to those of the wiry Seikh, as their physical strength and pluck are superior to those of any enemy with whom they come in contact.

Much curious and valuable information on these points is contained in a report on the Pathology of the diseases of the Army in the East, by Dr. Lyons. It was found in the Crimea that the lads sent out were utterly unequal to the hardships of the field, and bore equally ill the sufferings of the hospital. Of the 664 sent into the surgeon's hands from the assault on the Redan, the average age was twenty-four years and six months, and a large number of them were under twenty.

These boys bore surgical operations extremely ill, and of the great mortality from all causes, the brunt was borne by the young soldiers. It was justly remarked by a critic on the book above referred to, "that the whole moral of the report by Dr. Lyons "is that we should greatly economise our cost, and "the number of men we can place upon the field, if "we selected them of a proper age, kept them for "years under training at home, and gradually inured "them to their labors, as well as taught them how to "perform those labors properly ; and thus sent them "into the field soldiers matured in body, hand, and "head, instead of raw recruits, largely intermingled "with candidates for the hospital or the grave."

It could be shown equally well, that to send men past forty years of age to the tropics for the first time, is nearly, if not quite, as dangerous as the opposite extreme above discussed. It is infinitely less likely to occur, however, and so few comparatively survive the risks of soldiering much beyond that age, as to render it a matter of infinitely less importance.

Having selected our material with the extreme care and attention necessary, can the European soldier be so inured to the climate of India as to enjoy in it a fair chance of prolonged life in health and strength? In other words, can the European be really acclimated, or acclimatized, as it is now termed?

If it be supposed that man can thoroughly adapt himself to all varieties of climate, and that his chances of life are equal in all, by modifying his habits and customs to those of indigenous races, the answer would at once be in the affirmative. So thought Malte Brun, the eminent geographer, and so apparently think those who talk much, but evidently understand little, of colonizing the plains of India by an Anglo-Saxon people.

But, in this sense, I hold the thing to be an impossibility. The power of change, although great, is limited, and involves so entire an alteration in the food, clothing, habits, occupations, social customs, and physical as well as moral attributes of the race, as can never occur. Physical degeneration would soon follow, and those who were spared by the sun and the soil, would disappear utterly in the third generation, to which very few indeed would survive.

The only exception that I have ever heard of exists in the Island of Reunion, where the fifth and sixth generations, in direct lineal descent from the buccaneer of days long gone by, exist in the white Creoles of to-day. But the soil and climate of this gem of the ocean are entirely different from those of the plains of Hindostan. They more nearly resemble the

steppes of Central Asia, where a white race can take root and flourish as vigorously as in any part of the Northern Hemisphere.

So they would in any of the Himalayan ranges, where the children of pure and mixed European descent are as strong, vigorous, and healthy, as on the downs of Sussex, or in the Trossach glen.

But so they would not, and do not in tropical plains, as every-day experience can convince the most superficial observer.

To the young soldier in India, General Jacob tenders the following advice :—

“ Let it be the fashion to be English. It is a fallacy to suppose that the climate compels to be otherwise. Let the young man never enter a palkee, but go about on the back of his pony. Let him not fear the sun—it may tan his cheeks, but it will not hurt him. It is your effeminate gentle-folks, who live in dark houses artificially cooled, with a dozen Hindoos at work with fans and flappers to beat the flies off them, who suffer by exposure, not the hardy young Englishman, who, if not intemperate, soon becomes acclimated ; and the more readily so, the less he regards the sunshine, which is healthy enough in moderation.”

This is denounced by Mr. Jeffreys as dangerous doctrine to propagate, except in regard to the maritime stations of the Bombay and Madras Presidencies.

The sad experience of last year's summer campaign is somewhat against General Jacob, but the fact is, that the men had not a fair chance against either

the sun or the morbid heat of an unusually hot season. When they were handled by experienced officers—as in Colonel Eyre's brilliant campaign, in the siege of Delhi, and in the gallant Outram's force at the Alumbagh—they suffered comparatively little. But when commanders and troops were alike equally unused to the country and the climate, the loss and suffering were frightful.

The Indigo-planter in Tirhoot, Gorruckpore, Jessore, or Nuddea, is able to ride across country, and spend hours in the sun at all times of the year, with absolute impunity, so long as his head is well protected, and he eschews sherry-cobbler and sangaree.

Moderation is what the soldier cannot command in regard to sunshine, and cannot practise in the presence of strong drinks.

A remarkable example of the real *fons et origo* of the mischief happened, we have heard tell, in the column of General Franks. That excellent officer decreed that every drunkard should be in the rear, and not partake of the honor of fighting in front. The grog-seellers were flogged and turned out of his camp. Drunkenness ceased, and, if our memory be not treacherous, there was an absolute end to apoplectic seizures in his little army.

The fact is significant. The sober, if the head and loins be properly protected, can bear a large amount of exposure with greatly diminished risk, not far short of impunity.

By far the most eminent of recent authorities on the subject of which we are treating is Monsieur Boudin,

the medical chief of the Military Hospital of the Roule, who has published the most elaborate treatise extant on Medical Geography.

This careful and erudite observer, who appears to have consulted and analysed all existing materials upon the question of acclimatization, is of opinion that the European can never take permanent root and propagate his race unchanged in moral and physical qualities, in a tropical climate. He regards the colonization of Algeria by the French as impossible. The Jew and the Gipsy he places in the first class of cosmopolites, and considers Spaniards, Italians, and the people of the south of France, as better suited for tropical migration than the northern nations of Europe.

But Monsieur Boudin evidently treats the question as one of entire transplantation, and not of the simple *vivere* and *valere*, which it really is, as regards the European soldier in India.

With hill stations within easy reach ; with properly constructed barracks in the plains ; with more suitable clothing and protection for the head of the soldier ; and, above all, with the provision of healthy, moral, physical, intellectual recreation to wean the soldier from his present fatal habit of indulgence in the distilled poisons of the bazaar—his chance of life and health in India need not be much below those of his class in more favored countries.

No European corps should be kept longer than two consecutive hot seasons in the plains. Railways to the foot of the hills would, at all times, in a few

hours, convey invalids to a more bracing climate, while they would, with equal speed, concentrate a strong European force on any point in the plains in which rebellion, mutiny, or strife, needing repression by physical power, could arise.

For the police duties of the country, for the tenure of unhealthy frontier outposts, and for the performance of such military duties in times of tranquillity as necessitate much exposure to rain and sun, to miasm and jungle, a native army must always be entertained. It is foreign to my purpose to discuss the composition of such an army. It is sufficient to declare that it *must* be called into existence.

It should possess no artillery, and be more restricted in its mounted branches than was the old force.

The guardianship of all arsenals, magazines, treasuries, and fortresses, should be entrusted to Europeans exclusively. In these duties little exposure of a dangerous kind is needed in the unhealthy seasons ; and thus the British soldier may, by being divided between hill and plain, be maintained in health and efficiency, to an extent never yet attained.

The only point remaining to discuss is, as to whether prolonged, continuous residence in a tropical climate, renders Europeans more or less susceptible of disease ?

The data to determine this point are extremely defective. The popular belief is, that old residents are better able to resist climatic influences than newcomers ; that the thoroughly seasoned are proof against morbid agencies, to which the unseasoned quickly succumb. The old Indigo Planter and the veteran

sportsman can undergo great exposure and hardship, with more impunity than the tyro.

But to this there is a limit, which is not confined to tropical climates or countries. The two ages, which according to M. Quetelet, exhibit the maximum of viability, are 14 and 30 in Belgium. After the latter age, the chances of life diminish gradually but surely, and this diminution is probably greater for Europeans in the tropics, than it would be in their own country.

The tendency to most diseases which are caused or aggravated by heat, is much increased with advancing years, so that prolonged residence in India does undoubtedly deteriorate health to some extent, and thereby diminish the chance of life.

To sum up briefly, then, my opinions upon a subject which it would take a volume to treat technically. I believe that, for the purpose of colonizing the plains of India, of toiling in the fields and on the roads, of living in Bengal and Behar as he would in England or Ireland, the Saxon and the Celt are utterly unfitted. They could not propagate a healthy, vigorous race, with European physical and moral powers, and those who did not fall a sacrifice to the climate, would soon degenerate. The whole tribe would disappear in the third or fourth generations.

The few examples to the contrary are more apparent than real. The Dutch at the Cape and in Java, the Spaniards in Mexico and Cuba, the Portuguese in India and the Brazils, have flourished, and are believed to have been prolific, healthy races in all the

localities mentioned. In none of these instances have they been the actual cultivators of the soil, become hewers of wood and drawers of water, or been exposed to all the changes and chances of a laboring population. The external and internal domestic drudgery has fallen either to an indigenous or a slave race ; and *they* have occupied the position now held by the English in India.

I once heard the present Finance Minister at the Hague, who was formerly Governor-General of the Dutch possessions in the East, state that he had instituted careful enquiries in Java, and that similar inquiries had been made in all the other tropical colonies belonging to the Netherlands, as to the influence of the respective climates of those possessions on the Dutch settlers. The result was, that not a single white family, of *unmixed* descent, could be traced beyond the third generation. The few who had survived were degenerate, apathetic, and scrofulous. The females were usually barren, and the males had lost their European characteristics.

The same is the case in India—for the so-called Portuguese are in reality children of the soil, and not of pure descent.

And, even if they were, the strong infusion of the Moorish element in the inhabitants of the Peninsula of Europe might well account for their descendants bearing tropical transplantation, better than the more northern nations of the globe.

On the other hand, with proper care, Europeans can be so far acclimated in India as soldiers, planters,

merchants, railway engineers, sailors, civilians of all kinds, and controllers of labor, as to have a fair chance of life and health, without moral or physical degeneration.

For the soldier it absolutely requires that he should not be sent out too young or too old ; that he should be thoroughly drilled and trained at home ; that his clothing, food, parades, occupations, and dwellings should be carefully adapted to the climate ; and that he should not be left in the plains longer than two, or at the most three years at a time.

At all elevations above three or four thousand feet he can live and thrive as vigorously as in Europe, and thus counteract the temporary injury his constitution may have sustained in the plains.

To this extent he can be thoroughly acclimated. All beyond it, is a snare and a delusion.

V.

HIS FOOD AND DRINK.

Most Europeans in the tropics, in easy circumstances, consume more animal food and stimulant beverages than is good for them. The soldier in particular, except in the field, eats too much meat, drinks more of strong liquors than his system can dispose of with impunity, and takes too little exercise to ward off the effects of his stimulant dietary. The result is that he attains the condition of a Strasburg goose, of which disease and death are the penalty.

Mr. Macnamara in India, and Mr. Gant in England, have shown that the results of the over-feeding of men and cattle are nearly identical. The excess of carbon is not consumed, and being deposited in the form of fat in the liver, kidneys, heart, and muscular tissue, proves rapidly destructive.

In 1853 the rations of the European soldiery in India were fixed at—

Bread	..	.	..	1 pound.
Meat..	..	..	..	1 „
Vegetables	..	..	..	1 „
Rice ..	..	..	..	4 ounces.
Sugar	..	..	..	2½ „
Coffee..	..	..	..	1 $\frac{3}{7}$ „
Or Tea	..	..	..	0 $\frac{5}{7}$ „
Salt ..	..	..	..	1 „
Firewood	..	.	..	3 pounds.

The meat is usually beef. Mutton is given twice a week when procurable, and to it the soldier himself adds bazaar pork.

The daily allowance of food thus consumed is more than double the amount issued in the Royal Navy, where the greater part of the life of the individual is spent in the open air, and where he is constantly compelled to undergo an amount of physical exertion unknown to the soldier, except in war.

It would prove much more injurious than it does at present, if the quality were equal to the quantity.

The following, according to Mr. Macnamara, was the ordinary routine life of a soldier of the 1st Bengal Fusiliers at Dinapore :—

“ After sleeping through the night in the very hot
“ close air of the barracks, he rises at gun-fire and
“ goes to parade, after which he employs himself in
“ cleaning his accoutrements till breakfast time—
“ 8 o'clock. This meal over, he lies down and sleeps till
“ dinner time, and after dinner he generally retires to
“ his bed again, and sleeps more or less till 5 o'clock,
“ the temperature of the barrack being frequently as
“ high as 104° F. at that period of the day. About 5
“ o'clock he has to prepare himself for parade ; this
“ over, he saunters about till 9½, and then turns in for
“ the night.”

To discuss the nature of the nutritive principles contained in food, the due balance between the carboniferous and nitrogenous elements, or any other of the mysteries of dietetics which science is gradually unfolding, is foreign to my purpose.

Those interested in the matter, in its relations to troops, will find much very valuable information regarding it in the report of Mr. Sidney Herbert's Commission, and in the paper of Dr. Chevers.

It is sufficient for my purpose to state that the quantity of meat in the hot weather and rains should be diminished, and that of vegetables increased. The latter can, at all times and seasons, within the cost of the existing dietary, be accomplished with the aid of the desiccated and compressed vegetables now produced and exported in large quantities. The best and most wholesome of them is the dried potato. In the winter the regimental garden could and should furnish all that is needed.

Pork, unless educated in a regimental farm, or better brought up than in the bazaar, should be absolutely prohibited. Fish, in the vicinity of the large rivers, and on the sea-coast, might occasionally, with benefit, be substituted for meat, especially in the hot season.

But, above all, it should be well and properly cooked by the men themselves. The practicability of military cooking was established by the late Monsieur Soyer, as recorded in his culinary campaign. It was popular among the men in the Crimea, and would become so everywhere, if proper attention were paid to it.

Mr. Gubbins, in his graphic account of the siege of Lucknow, mentions incidentally, that when the cook boys levanted, the men of the 32nd had to cook for themselves. They were awkward at first, but soon

acquired the requisite skill, and were well satisfied with their performances.

The idleness of the barrack-room, and the necessity of furnishing more occupation for the soldiers in garrison, are alone sufficient reasons for compelling them to cook for themselves in time of peace.

The necessity in the field is still greater, as cooks and followers of all kinds are multiplied to a most injurious extent in India, and are, besides, liable to make themselves scarce when most wanted.

A beginning in the right direction has been made in the Medical Staff Corps, in which professional cooks are regularly entertained. One or two enlisted in every regiment, would soon leaven the mass.

The baking of the bread, grinding of the wheat, and the whole preparation of the food of the soldier for consumption, should, as far as possible, be performed in the barracks and by the soldiers themselves. The more independent they are made, and the more intimate their acquaintance with supplying their own wants, the better for them in every point of view. There is no real difficulty in the matter, and the present helplessness and idleness of the soldiery cannot cease too soon for their morals and their manners, their health and their happiness.

There is scarcely a corps without butchers, bakers, tailors, blacksmiths, shoemakers, bricklayers, gardeners, and most other varieties of handicraftsmen, whose knowledge might and ought to be turned to good use. For those regiments in which they are not to be found, they should be specially recruited.

The subject of the soldier's dietary is, in truth, one of the most important matters connected with his well-being and efficiency. It should never, in any circumstances, be subject to his own control, or be liable to fluctuation on account of deductions from his pay, or from the dear or cheap state of the market near which he may be quartered.

In fact, as stated in the terse and clear language of Dr. Balfour's report :— "That course should be
" habitually adopted in peace, which will best satisfy
" the requirements of a careful administration of the
" public finances, and be the most applicable to a state
" of war whenever war may break out.

" An army is maintained in peace with a view to
" the contingency of war, and it should be so organised
" as to be capable of expansion with the least possible
" change of method and system on the part of those
" who administer it. The mass of mankind do nothing
" well which they have not done long; and every
" change unnecessarily made at the commencement of
" war, when such disturbing influences are unavoidable, is the addition of unnecessary error and confusion.

" It appears to us, therefore, that all the arguments
" for a fixed stoppage and full ration in time of war
" apply also to a time of peace. In both cases it is the
" duty and interest of the Government to see that the
" soldier is provided with such a ration as will keep
" him in health and efficiency."

The Committee accordingly recommended one uniform rate of stoppage at home and abroad for the entire ration, the Government supplying the whole.

Fighting needs a full stomach, and the training in peace should always be subservient to the purposes of war, as mentioned above.

The diet of the tropics will necessarily differ from that of the Antarctic regions ; that of the plains from the stations in the hills. The determination of the local difference should be left to the experienced medical officers in each, care being taken in all cases that the highest attainable standard of health and efficiency is maintained.

The question of strong waters is more difficult to determine. In this desirable direction much has been done by the judicious regulation of canteens ; by the sale in them of sound, wholesome, malt liquors at reasonable rates ; by the increasing taste for tea and coffee ; and by the example of the officers, whose own habits have changed with the general change of society in this respect.

Temperance Societies are opposed to military discipline, and are of little efficacy. The real means of weaning the soldier from his present pernicious indulgence in the fatal habit that kills more than sun, marsh, and sword combined, is to improve his moral and social condition, to hold out greater inducements to good men to enlist, to encourage marriage and the amenities of an honest man's home in the soldier's barrack, to introduce the practice of industrial occupations, and to furnish the means of such amusements as invigorate the frame without inducing ennui. These are bowls, quoits, cricket, rackets, gymnastics, swimming, and such other out-door amusements as

healthy men never tire of, and drunken sots seldom indulge in.

That the men themselves readily take to such pastimes, who can doubt who has been acquainted with them in their own homes, before every moral feeling and healthful excitement has been blunted and blighted by the idleness and vice of the barrack-room as it now is? The practice of issuing rations of rum to young recruits should at once cease. Many a fine lad has been ruined by it.

To pursue this topic further is unnecessary. The magnitude and corroding influence of the vice are self-evident. The statistics of army disease record, with unerring accuracy, its general and fatal prevalence. It has literally realized the prophecy of Milton, that

“ Intemperance on the earth shall bring
Diseases dire, of which a monstrous crew
Before thee shall appear.”

Of the efficacy, in due time, of the remedial measures suggested above, we entertain not the smallest doubt. The good work has, indeed, already begun, but like all other social changes, to be permanent in its results, its growth must be gradual.

VI.

HIS WIFE AND CHILDREN.

If it be essential that the soldier should not be retained in the plains of Hindostan longer than is absolutely necessary, it is still more needful that his wife and children should dwell in the hills, where both can thrive and flourish.

The mean average mortality of the partners and progeny of the European soldiery in India, is, at least, three times greater than among the same classes in England. The data from which this result has been obtained are imperfect, yet they are sufficiently accurate to prove that an enormous sacrifice of human life now occurs, which is perfectly and easily susceptible of prevention. Reasons of humanity, then, plead trumpet-tongued for the preservation of this important body of European dwellers in the East. Unlike most of the class to whom the term adventurer has been applied—which epithet I regard as a title of high honor, for it is to her adventurers, the pioneers of civilization and progress, that England owes much of her greatness—India is the land of adoption of the soldier. It is the permanent home, from which the majority neither desire nor expect to return. Policy thus concurs with humanity in demanding their conservation.

The only really feasible plan of establishing an European colony in India, consists, in my belief, in inducing the retired soldiery to settle in the hill tracts of the Himalayas. The evidence collected by the Government of India two years since, would seem to show that the European pensioners are indisposed to any such proceeding, and that the means of locating them in eligible, elevated positions are extremely limited.

The evidence on the subject is the most meagre, incomplete, and insufficient that has ever been collected to determine an important question.

No proper steps have ever been taken to ascertain the real sentiments of the soldiery on the subject, nor have sufficient inducements been held out to tempt them to become settlers in the hills.

Where European corps are cantoned in the hills, there will pensioners begin to squat, and once a nucleus is formed, so gregarious are soldiers, from their training, that it will rapidly extend and become permanent.

By affording them grants of land, by supplying them with the implements and materials of husbandry, and by organizing them somewhat after the fashion of the Russian military colonies, I entertain no doubt whatever that a hardy, healthy, enterprising Christian population would rapidly arise.

No more effectual barrier could be interposed between the wild hordes of the steppes of Central Asia and the rich plains of Hindostan.

As officers settle in New Zealand, Canada, the Cape, and other colonies, so would many of them take root in those Himalayan localities, where colonies are commenced, if equal inducements were held out to them.

By placing districts peopled with retired soldiers and their families under their charge, order would prevail, the necessary machinery of civilization would rapidly be organised, and a branch of the Anglo-Saxon family be permanently planted in Asia.

The cultivation of tea and coffee, the rearing of vast herds of fleece-bearing animals, agricultural industry, and the development of the mineral resources of those mountain regions, would give life and energy, commerce and maintenance, to thousands yet unborn.

Now that the Chinese Empire is to be thrown open to the whole world, what is to prevent the establishment of a direct commercial intercourse at the points in the hills, where the Chinese and British territories are conterminous?

Numbers would migrate in search of occupation and wealth to the plains below, and carry the results of their industry to their mountain homes.

The habits of industry and strong love of liberty and freedom, indigenous in all mountain races, rob the experiment of all fear of the degeneration of an Anglo-Saxon people in the grandest Alpine chain of the universe.

Let the trial be made at once in the vicinity of Darjeeling, regarding the eligibility of which there can be no doubt.

Begin by planting a settlement of 200 families, under a retired officer interested in the experiment. The cost will be comparatively trifling. The proximity of an European regiment at Sinchal will reconcile the colonists to their location, and will provide a ready market for all they can produce. The whole staff needed for the settlement will be an officer, armed with magisterial powers, to command ; a retired apothecary to look after the health of the community ; with a missionary and a Roman Catholic priest to instruct the young and minister to the spiritual wants of all.

Among the colonists should be a butcher, a baker, a tailor, a shoemaker, a carpenter, and a bricklayer, Great settlements in the New World have begun with far less, and are now wealthy communities.

The soldier has been so accustomed to have his wants provided by others, that he always makes a helpless citizen in the beginning. To leave him to his own resources and devices, until he is fairly afloat, will be to secure failure, as occurred in the ill-conducted attempt made a few years since, with the pensioners sent to Cherra Poonjee.

It is not worn-out veterans who are required for the purpose, but strong, healthy middle-aged men, with growing families. Very many of this class are entitled to retire upon small pensions, and would be glad to do so, with the prospect of a comfortable maintenance, such as a military colony would afford.

The lot of the soldier's wife in the plains, is at present, hard and unenviable. When not dissipated and

abandoned, she is a poor, faded, dejected creature, heart-broken or callous from the numerous deaths among her children, with few of the comforts, and fewer still of the decencies of a home.

The indiscriminate herding together of men, women, and children in the old ill-constructed barracks of India, was alone sufficient to deaden and destroy every particle of, or pretensions to, modesty in the wives and daughters of the soldiery.

I have witnessed scenes of misery and vice in the married barracks of the Bengal and Madras Presidencies, of which the only parallels are to be found in the dens of iniquity of mining and manufacturing districts at home.

Praiseworthy and successful attempts are now being made to afford the married soldier in his barrack the comforts and decencies of a home. It would be difficult to exaggerate the priceless boon such arrangements afford to the gallant fellows who appreciate, as fully as the most cultivated of their countrymen, the proprieties and blessings of a well-ordered family.

The Anglo-Saxon is essentially a domestic animal, and although soldiers are not, as a class, celebrated for the practice of household virtues, no men are more easily weaned from vicious courses by judicious management.

The education of the class of women destined to become soldiers' wives, needs much more care and attention than have yet been bestowed upon it. The fine ladies who regard every branch of domestic duty

as drudgery fit only for natives of the lowest class, are utterly unsuited to the barrack-room. Instead of being trained in a ridiculous, pretentious, and useless system of instruction, as obtains nearly everywhere at present, they should be specially educated to become fit helpmates for a poor man. Their scholastic acquirements should be restricted to such an acquaintance with reading, writing, and arithmetic, as will enable them to understand their Bibles, to peruse with pleasure and profit the many healthy works of amusement and instruction now published at small cost, and to keep the accounts of their little establishments.

To trouble them with any of the ologies not needed in housewifery, is to produce in their minds what has been termed, not inaptly, "the confusion of useless knowledge."

Their chief attention should be devoted to the acquisition of those arts, the practice of which can alone secure order, cleanliness, and comfort to the fireside of the man of small means.

Needlework, cookery, the management of a dairy and a farm, the duties of a wife and a mother, should, so far as they can be inculcated at an early age and in a school, be the real end, aim, and object of the training of the future soldier's wife.

I have frequently heard steady, prudent, well-conducted soldiers declare that they preferred an uneducated native wife, to the best of the inmates of the Lower Orphan School, or of the European Orphan Asylums in Calcutta and Madras.

The former, they said, was gentle, quiet, obedient, fond of staying at home, very careful of her children, and anxious to minister to the comfort and happiness of her rough companion, by such artless acts of devotion and affection, as are implanted by nature in all female breasts, savage and civilized.

The latter was, far too often, a fine lady, alike regardless and ignorant of domestic duties, fond of gossip and flirtation, given to scandal and idle junketing, slatternly and dirty in her home, not unseldom drunken and disorderly, and altogether ill calculated to produce happiness in her husband's household.

An attempt was made, not many years ago, to introduce in the Lower Orphan School at Kidderpore, a knowledge of useful things as an essential branch of the education of the female orphans of the Bengal Army.

It was resented and resisted, actively and passively, as an intolerable innovation, and a degradation to those who had been used to be waited on, and deemed household toil in any form, a burthen not to be borne. I never heard the result of the experiment.

I have not seen the Lawrence Asylum, but trust that, under its excellent Superintendent, so vital a mistake in the plan of training its inmates has not been made as to cram them with the worthless trash of heathen mythologies and poetry, to the neglect of those branches of practical information that will fit them for their future position.

The real value of careful Christian training was seen in the ever memorable siege of Lucknow. While the gentle and the well-born performed every office of mercy, and even of menial drudgery, with a patience and cheerfulness beyond all praise, those more capable of toil are said, in many instances, to have shrunk from the task. The facts need no commentary.

I recently had the misfortune to be cabined in the vicinity of a barrack virago, whose liege lord had much of the Moor in his composition, but was otherwise a kind, indulgent husband. Of all the termagant scolds the world contains, I have not met the match of this compound of Xantippe and Billingsgate, in ribaldry and blasphemy of tongue.

Yet she was fair to look upon, and must, naturally, have been of a gentle and kindly nature, before ill-directed education and the barrack had utterly effaced, in her paroxysms of fury, every trace of feminine feeling.

The children of the soldier are well worthy of the care of the nation.

In the plains they pine and die, according to some returns, at a frightful rate, and according to all at three times the rate of mortality in England.

The following remarks from the valuable work of Dr. Kenneth Mackinnon on the diseases of India, exhibit the risks incurred by the children of the upper classes of Europeans in the plains. The comparatively ample incomes of their parents provide for

them luxuries and means of warding off the approaches of disease not possessed by the soldier :—

We have a proof of the effect of the climate on the European constitution, in the early drooping and decay of children born in the country. Even when there is no tangible disease, nutrition and oxygenation do not appear to go on favorably ; the skin is pale, the muscles wanting in substance and in tone, the joyous spirits of childhood are wanting, the body is inert, and the mind listless. Mr. Martin states that, in Calcutta, few children continue to grow up with signs of health beyond the fifth or sixth year. In my experience in Behar and the North-West, I would say the ninth or even the tenth year. The fact mentioned by Mr. Twining, and corroborated by Mr. Martin, that there is no instance of a third generation from unmixed European stock, appears to me of extraordinary interest in a physiological point of view, chiefly as showing how much constitution is a matter of descent from the parents ; but also with reference to the great question of the varieties of the human race, and the descent of all from an original pair. The extreme heat, the sudden changes of temperature, and the coldness of one particular season, make the period of dentition be accompanied with head determination and bowel disturbances ; but, considering the great comparative exemption from scarlatina, rubeola, and even variola, and the mild invasion of pertussis, we may be warranted in concluding that the children of parents, in comfortable circumstances, are not severely visited. There is a watching solicitude on the part of parents, and even on that of the medical attendant, as he is usually the personal friend of the family, and has besides a limited field of professional anxieties, which, in my opinion, has a great effect. Disease is sooner treated and more easily checked consequently. A modern fashion has arisen, requiring remark. I allude to bringing up children at the hill stations. The question has

a medical and a general bearing. On the first, I would remark that the change is not absolute enough, and, without arguing the question further, I will ask to be shown a hill-grown bird, hatched on the plains, with the same brilliant plumage as one who has had his flight to the old country. With respect to the second question, I might be content with what has already been written ; but I will just mention, that it is impossible to make the education strictly an English one ; and even if we had the domestic economy of schools, and the system of teaching, strictly home-like, where is the education the mind is receiving out of school at every hour, and by all its senses, these outposts to the citadel of reason ? The bodily organization may come to considerable perfection in the hill stations, and, no doubt, a very rational and intelligent being may be reared there ; but he will not be an Englishman, nor a Scotchman, nor an Irishman, or so good a man in mind or body as either.

The latter inference may fairly be doubted, for, if the physical organization is perfect, it will not be difficult to find the moral means of preventing mental degeneration. A few years since, at the instigation of Colonel Cavanagh and myself, careful enquiry was instituted at all the hill stations in India as to the effects of their climate on the health of children of pure and mixed parentage.

The answers were unanimously favorable, and some observers of considerable experience declared that, in their belief, the climate of the Himalayan Hills was even better than that of any part of Great Britain, for raising a healthy, vigorous European and Eurasian population. The fact is, that many children born in India, and apparently healthy and robust in this

country, become scrofulous and consumptive at home. For all such, I entertain no misgiving as to the superiority of the climate of the Himalayas.

Every motive, then, of prudence, policy and humanity, concurs in recommending the transfer of the families of our European soldiers to the hills.

The observations of Mr. Jeffreys on this point are so much to the purpose, that I make no apology for presenting them without abridgment :—

The opportunity of pleading the claims of these hapless children cannot be neglected by one who, from the first hour he had to witness their sufferings and fate, has felt deeply and painfully impressed with the existence of a solemn duty in relation to them, unrecognised and therefore unfulfilled. The children of the soldiery of European blood, if retained in India, ought all of them to be reared on the Himalaya, Neilghery, and similar hills, affording elevations not under five thousand, and, where available, of six or seven thousand feet. The children might be brought down once a year, during the two coldest months, to visit their parents. Should any one object that such care of their children would entail too heavy an expense on the Government, the proper reply to him would commence with the generous old English maxim sadly ignored by economists in these days—"live and let live." "Your objection, if valid, would prove India indeed not worth its tenure; a due preservation of the families of those without whom you could not hold it a day forming a claim upon its revenues anterior in moral right to every other." Few children of pure English blood can be reared in the plains of India, and of that few the majority have constitutions, which might cause them to envy the lot of those who die in their childhood. The mortality of barrack children is appalling, especially in the months of June, September, and October.

At Cawnpore from twenty to thirty have died in one month. In short the soldiery leave no descendants of unmixed blood. Of the half million of soldiers who have gone out to India, where are all their legitimate descendants of pure English blood, who by this time would have multiplied into a numerous population if born in New Zealand, Canada, or Oregon, reciprocating industrial advantages with the mother country of their parents, how much more secure and durable than the military tenure of India can ever yield? Let myriads of feeble voices from little graves scattered throughout her arid plains supply the melancholy answer—"here."

But there are those who will further object—"If we do rear these families into adults, what are we then to do with them?" Were it allowable to rest a reply upon so low a moral ground, it might be argued that the males might all be employed with advantage in the service by enlistment into the army, and admission into subordinate posts in the Civil Department of the Government; while the females would be provided for as wives to them, and to soldiers who have not brought out wives from England. But the more rightful reply is—"if that be your objection, it ought to have been weighed before their parents were invited out to a climate in which the *Creator* manifestly never intended their offspring should be reared; the physical laws he has established, and will not, to destroy human responsibility, enact a miracle to counteract, being *fatally* opposed to it!" "If that be an objection, it ought to have been weighed before we took upon ourselves to hold sway over the country." "If that be an objection, it is more valid in the mouth of the Hindoo, far poorer than the Government, who, by the law against infanticide, has been restrained from a summary corrective in his own case, of this trouble of providing for children—a corrective which though awful to contemplate, is, when viewed in the light of humanity and reason, and not of custom, scarcely more indefensible than the *protracted liquidation*, equally certain in the result of

each generation of the infant life in question, than the accumulation of suffering entailed on each victim and on its sorrowing parents (where they have not grown callous in their hopelessness) by the detention of these little ones in the plains of India, *in the face of all experience!!*" Is there a "commissioned" or "covenanted" parent in India who could tolerate his position if he were compelled to keep his children there to sicken, to decline, and to die before his eyes, excepting here and there one with a tenacity to life, or a natural vigour enabling him to be reared into a miserable representative of the parent stock?

To the truth, the force, and the unanswerable reasoning of this earnest appeal, I can add nothing.

The Queen's government in India can be inaugurated by no greater boon to her invincible soldiers, than the provision of permanently maintaining their families in the hill ranges of the different Presidencies.

VII.

HIS PARADES AND PUNISHMENTS.

In ordinary circumstances the soldier has nothing to complain of in these particulars. Military punishments partake of the mild and humane character of all the penal measures of the times in which we live. The thousand lashes and flogging round the fleet, which many are old enough to remember and some to have experienced, are no longer to be found in Mutiny Acts. The vice of the soldier is undoubtedly drunkenness, which no punishment will eradicate. The cure of this degrading and destructive habit must be left to moral means. Improve the condition of the soldier, recruit him from a better class, make his barrack a respectable home, and encourage him to marry by making suitable provision for his wife and children. The rest may safely be left to time, to the growing influence of public opinion in regard to intoxication, and to the sure effect that will follow the accumulation of pledges of good behaviour—the hostages to fortune which the poor man affords in greater proportion than his wealthier neighbours.

With regard to parades, they should be so timed and regulated as to avoid undue fatigue and exposure. They should interest instead of disgusting the young

recruit, and should gradually develop his powers, so as to make him a smart, effective soldier without suffering and distress.

The new musketry drill is a vast improvement upon the old system. It teaches every man self-reliance, steadiness of eye and hand, and shows him that he is really a valuable entity in the organized body of which he forms a unit. The remainder of the drill should be made to correspond with it, instead of being a dull, monotonous, purely mechanical proceeding as it now is.

Above all, the soldier should be taught to march long distances without the distress to wind and limb that occurs at present. At least once a week every available soldier should be taken a full march, in light and heavy order. Those who fall out, are foot-sore, and are unable to keep up with the column, should be carefully trained on their own parade ground, morning and evening, until they are thoroughly equal to the largest stretch that can be required of them. Forced marches should also be practised occasionally to test the condition of the men. Foot-ball, rackets, cricket, foot and hurdle races, and military gymnastics, would all tend to the same end, if properly encouraged and pursued. But, to accomplish all this, it is needful that the OFFICERS should take more pride and interest in the technical details of their profession, than they do at present. It is not sufficient that they are brave in action, cool in danger, and always ready to lead where the fire is hottest and the odds are greatest against them.

They should be heart-and-soul soldiers. Such were Alexander, Cæsar, Frederic the Great, Napoleon, and so has been every really great commander. War is a science as well as an art, in which he will succeed best who has studied most. Dash, pluck, and daring are necessary qualities in a leader. But these very qualities are most serviceable and successful in the hands of those who are thorough masters of their art, and can handle their men with the same ease and unerring accuracy as the trained mechanic controls the vast powers of the steam-engine, or any other mighty force that enables him to conquer nature, to annihilate time and space, and to overcome the cohesion of the toughest bodies on the earth's surface, as easily as a thread is divided by the scissors of the sempstress.

As the officer is, so will be the men under his command.

In regard to punishments I have little to remark. The ordinary duties of the soldier should never be made the means and instrument of correcting his errors and punishing his vices. Hence I entirely disapprove all penal drills and parades. They are serious inflictions on the steady, well-conducted non-commissioned officers who superintend their execution, and generate a distaste for, and dislike of, the very duties in which the real efficiency of the soldier depends.

In the tropics, again, no punishments are justifiable which are calculated to injure health. In this category fall solitary confinement, midday punishment

parades, and the shot drill. The former should be resorted to with great caution, and when employed, should be accompanied with a fixed task, which the inmate of the cell should be daily required to perform. Solitude and idleness combined, consume body and mind : burn the candle, in fact, at both ends. The two latter are as senseless as they are injurious. The last named is the most unprofitable misapplication of power that can be devised or imagined.

VIII.

CONCLUSION.

With these remarks, hasty and imperfect as I know and feel them to be, I conclude my notice of
THE BRITISH SOLDIER IN INDIA.

Had the limited leisure at my disposal and other circumstances permitted, it was my intention to have discussed, in some detail, the proposals of Mr. Jeffreys on the recreative employment, and hopeful encouragement of the soldier. In those directions much remains to be done, by the establishment of industrial schools in regiments; by enabling the soldier artisan to accumulate, by his own exertions, the means of adding to his pension on retirement; by holding out to all the prospect of a return on furlough to their native land; and by organizing a scheme to supply with steady, educated soldiers all the lower ministerial offices in the Police and other departments, for which European agency is requisite, and in which it can alone be thoroughly relied on.

These and other important enquiries arising from their consideration I must leave to abler pens. In most of Mr. Jeffreys' views regarding them I concur, and to their attentive consideration I recommend those of my readers who are interested in the question.
